

Serial No. 10/020,937
Amdt. Dated February 17, 2005
Reply to Office Action of November 29, 2004

Docket No. MRE-0047

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A parts suction head of a surface mount device, comprising:

a motor configured ~~for generating~~ to generate a rotary force and ~~transmitting~~ to transmit the rotatory force to a ~~rotation~~ motor shaft positioned along a central axis of the motor;

a ball spline unit configured ~~for performing a rotation movement and a vertical reciprocation movement by~~ to rotate and to reciprocate vertically in response to the rotary force generated ~~from~~ by the motor;

a rotation shaft unit comprising a rotation shaft, wherein the rotation shaft unit is configured to be moved in a vertical direction and ~~to be~~ rotated for sucking or mounting parts; and

a plurality of couplings, comprising a first coupling configured for transmitting to connect an end of the motor shaft to a first end portion of the ball spline unit so as to transmit the rotary force of the rotation central axis ~~from the motor shaft~~ to the ball spline unit, and for transmitting a second coupling configured to transmit a rotary force ~~of~~ from the ball spline unit to the rotation shaft unit.

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2. (Currently Amended) The parts suction head of claim 1, wherein the plurality of couplings comprise: a first coupling configured for connecting the rotation central axis of the motor to a first end portion of the ball spline unit; and a second coupling is configured for connecting to connect a second end portion of the ball spline unit to the rotation shaft unit.

3. (Currently Amended) The parts suction head of claim 2, wherein a first end portion of the ball spline unit comprises a ball spline nut and the first coupling is connected between the rotation central axis of the motor shaft and the ball spline nut to maintain a predetermined distance m between the rotation central axis an end of motor shaft and the ball spline nut.

4. (Previously Presented) The parts suction head of claim 2, wherein the second coupling is configured to maintain a predetermined distance m between the second end of the ball spline unit and the rotation shaft unit.

5. (Currently Amended) The parts suction head of claim 1, further comprising a bearing fixed to the a ball spline nut and of the ball spline unit, wherein the bearing is configured to restrict a rotation radius of the rotation shaft unit.

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6. (Previously Presented) A parts suction head, comprising:
 - a rotation unit;
 - a ball spline unit;
 - a first coupling that rotationally couples the rotation unit to a first end of the ball spline unit;
 - a rotation shaft configured to rotate and to move vertically in a reciprocal fashion;

and

a second coupling that rotationally couples a second end of the ball spline unit to the rotation shaft.

7. (Previously Presented) The parts suction head of claim 6, wherein the rotation unit comprises a motor.

8. (Previously Presented) The parts suction head of claim 6, further comprising a bearing mounted on the ball spline unit and configured to hold the ball spline unit in a fixed position, but to allow the ball spline unit to rotate.

9. (Currently Amended) The parts suction head of claim 8, wherein the bearing is configured to align a rotational axis of the ~~rotator~~rotation unit with a rotational axis of the ball spline unit.

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10. (Previously Presented) The parts suction head of claim 6, wherein the first end of the ball spline unit comprises a ball spline nut, and the second end of the ball spline unit comprises a splined shaft.

11. (Previously Presented) The parts suction head of claim 10, further comprising a bearing mounted on the ball spline nut and configured to hold the ball spline nut in a fixed position, but to allow the ball spline nut to rotate.

12. (Previously Presented) The parts suction head of claim 6, wherein the first coupling is configured to separate a lower end of the rotation unit from an upper end of the ball spline unit by a prescribed distance.

13. (Previously Presented) The parts suction head of claim 6, wherein the second coupling is configured to separate a lower end of the ball spline unit from an upper end of the rotation shaft by a prescribed distance.

14. (Previously Presented) The parts suction head of claim 6, wherein the second coupling is configured to allow the rotation shaft to be detached from the ball spline unit.